NEIGHBORHOODS AT RISK

A REPORT ON INDUSTRIAL ACCIDENTS IN CONTRA COSTA COUNTY: 1989-1996

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I. INTRODUCTION

Contra Costa is a County in harm's way. One of the most heavily industrialized counties in California, Contra Costa workers and residents have suffered from 35 major industrial accidents since 1989. Although industry claims that major accidents are very rare, on average there has been a major accident every 2½ months in the County. Clearly accidents are preventable, but regulatory gaps must be addressed in order to reduce the increasing number of major incidents in our industrial belt.

In just the last few years, industrial accidents in Contra Costa County have killed workers, injured thousands of people, closed schools and freeways and required evacuation of workers and residents of surrounding communities. Smoke from fires and explosions has rained potentially toxic ash on many neighborhoods and communities.

There have been over 1700 incidents at ten major facilities in Contra Costa County between 1989 and 1995. These include the notorious General Chemical release in 1993, when more than 20,000 people sought medical care, and the infamous catacarb release in 1994, where the Unocal refinery over a 16 day period allowed over 100 tons of catacarb to pollute nearby neighborhoods despite the fact that refinery officials knew the release was occurring.

There have been 17 accidents (more than 2 per year!) that have caused injuries. Most often workers have been the victims, but nearby residents have also suffered. Four accidents have caused schools to be closed. Two accidents have closed freeways because of toxic clouds. Four accidents have forced residents to evacuate their homes or be confined inside.

Existing programs have unquestionably failed to protect the public. Industrial accidents are increasing rather than decreasing. There were 358 accidents in 1992 when reporting requirements improved, and there were 507 accidents in 1995.[1] Incident

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[1] Despite industry claims that the increase in accidents is due to their improved efforts at reporting even small spills, the steep climb in serious incidents can not be explained away. Industry's inherent admission that they have not always reported toxic releases should surprise no one. A refinery emergency response plan audited by a community/worker panel plainly discouraged reporting off-site impacts by claiming that such reports could "cost" the company more than releases of which the public was unaware.

records show that these accidents have been repeatedly caused by companies that have failed to implement safety recommendations. These companies presently store more than 123 million pounds of toxic chemicals in Contra Costa County, an indication of the horrible potential for future disasters.

It is time for fundamental change. The citizens of the County deserve land use standards that will make these facilities compatible neighbors. It is time to end a bizarre double standard where a homeowner must get a building permit for a deck remodel while a billion dollar industry with a track record of injury and death needs no building permit at all for industrial equipment. Developers of shopping centers and subdivisions must get land use permits under public review from the Planning Commission, while industries that have polluted our neighborhoods with toxic gases and injured our friends and family members are not subject to any Planning Commission review.

II. INDUSTRIAL ACCIDENTS IN CONTRA COSTA COUNTY: 1989-1995

A. Numbers Of Accidents

Contra Costa County is the eleventh worst County in the nation with regard to toxic accidents with over 1,900 incidents reported at the major industrial facilities in the County between 1989-1995. (Table 1.)[2] The ten industrial facilities reporting the largest number of incidents accounted for over 1,700 of the total incidents at the major facilities in the County. (Table 2.)

Almost 90 percent of the reported incidents occurred at refineries and chemical plants. Among refineries, Unocal reported the largest number of incidents with 474 reports between 1989-1995. Among chemical plants, Dow reported the largest number of incidents, with 235 reports. (Table 2.)

The number of incidents reported to the County has increased from 68 in 1989 to 507 in 1995, or by over a factor of seven (Figures 1-3). The increase in total number of accidents can not be explained by the often repeated industry claim that companies have started to report even small releases due to public pressure. Even assuming a modest percentage of the increase is due to better reporting beginning in 1992, a steep increase in toxic releases would still be evident. Since 1992, there has been a *140 percent* increase in the number of incidents.

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[2] There have been 226 incidents reported at these facilities in the first six months of 1996, raising the total number of reported incidents since 1989 to 2,140, and indicating that the increasing trend of accidents and releases is continuing unabated.

Table 1
Number of Incidents by Year at Major Industrial Facilities in Contra Costa County

Industry	1989	1990	1991	1992	1993	1994	1995	Total
Air Products Co.	-	-	1	-	-	-	-	1
American Color	-	-	-	1	-	-	-	1
Arco	1	-	4	-	-	-	1	6
Bay Area Environmental	1	5	-	-	-	-	-	6
Bay Cities Paving & Grading	-	-	-	-	-	1	-	1
C&H Sugar	2	1	-	2	2	1	-	8
California Oils Co.	-	2	-	-	-	-	-	2
Chevron Refinery/Chemical	14	11	35	72	37	76	59	304
Concord Naval Weapons Station	-	2	2	1	1	5	3	14
Cooper Drum Co.	-	-	-	1	-	-	-	1
Criterion Catalyst	1	-	-	-	-	1	1	3
Dexter Hysol Adhesives	1	-	2	2	-	1	1	7
Diablo Chemical	-	-	-	-	-	1	-	1
Dow Chemical	9	8	47	67	32	34	38	235
Dupont	1	3	1	2	3	6	14	30
Exxon	-	2	4	1	-	2	1	10
Feralloy West Corp.	-	-	1	2	-	-	-	3
Foster-Wheeler Cogen Plant	-	-	-	-	-	1	-	1
General Chemical	9	4	6	8	19	12	9	67
GWF Power System	-	-	-	4	-	2	2	8
Harbor Plastics	-	-	-	-	2	-	-	2
ICI Americas/Zeneca	-	-	-	2	2	1	4	9
Imperial West Chemical	2	4	5	-	2	1	1	15
IT Corporation	1	3	-	1	-	1	1	7
Kaiser	-	2	2	2	6	-	2	14
Marvais Steel	1	-	-	-	1	-	-	2
Monsanto	-	-	-	-	-	2	1	3
O'Brien Iron Works	-	-	-	-	2	-	-	2
Ozol	-	2	1	-	2	1	-	6
Pacific Bell	2	-	-	2	1	-	-	5
Pacific Refinery	1	2	3	25	23	19	13	86
PGandE	2	2	3	3	2	9	11	32
Pinole Point Steel/Colorstrip	-	2	1	2	4	-	-	9
Poly-Cal Plastic	-	-	-	1	-	-	-	1
Rhone Poulenc	-	2	3	2	1	2	1	11
Richmond Machine & Fab.	-	-	1	1	-	-	-	2
RMC Lonestar	-	-	1	1	1	-	1	4
Santa Fe Pacific	1	-	1	1	1	7	2	13
Sheldon Oil	-	-	-	1	-	-	-	1
Shell Refinery/Chemical	2	12	17	35	38	59	55	218
Southern Pacific	-	1	5	3	1	-	1	11
Standard Oil	-	-	1	-	-	-	-	1
Texaco	-	1	1	2	1	-	-	5
Tosco Refinery/Chemical	3	4	7	47	46	83	63	253
Tracor Aerospace	-	-	-	-	2	-	-	2
Unocal Refinery/Chemical	12	6	11	60	58	107	220	474
USS Posco	1	-	1	4	2	-	1	9
Varian	1	-	-	-	-	-	-	1
Wickland Oil	-	-	-	-	2	3	1	6
Witco	-	-	-	-	1	-	-	1
Total	68	81	167	358	295	438	507	1,914

Table 2
TEN FACILITIES REPORTING LARGEST NUMBER OF INCIDENTS: 1989-1995

FACILITY	NUMBER OF INCIDENTS: 1989-1995
Unocal	474
Chevron	304
Tosco	253
Dow	235
Shell	218
Pacific	86
General Chemical	67
PG&E Power Plants	32
Dupont	30
Imperial West Chemical	15
Total: Top Ten Facilities	1714
Total: All Reports to County	7045

It is also safe to assume that a significant number of chemical spills go unreported due to a variety of reasons, including the remoteness of certain potential sources, such as pressure relief valves. In addition, a recent community/worker audit of the emergency response plans at a Contra Costa refinery revealed the corporate policies which discourage reporting toxic releases. During the initial stages of an accident, managers must refer to a chart to rate the seriousness of the event according to what the potential costs are to the corporation. The plan clearly indicated that toxic releases will hurt the company less if the public is unaware of them.

The most troubling aspect of the number of accidents is that most occurred at ten large industrial sites. These facilities include corporations that are reported to be among industrial leaders in improved safety and community relations: Dow Chemical, DuPont, Chevron and Shell. Others have checkered records, such as Pacific and General Chemical. If large numbers of releases are occurring at an increasing rate at both the "safest" and the "worst" facilities, then more effective regulation and oversight is clearly required. County officials have given the petrochemical industry a chance to put their house in order. This approach has clearly failed, and a rapid response before the next accident strikes is required.

Figure 1

Number of Incidents At Major Industrial Facilities
In Contra Costa County: 1989 - 1995

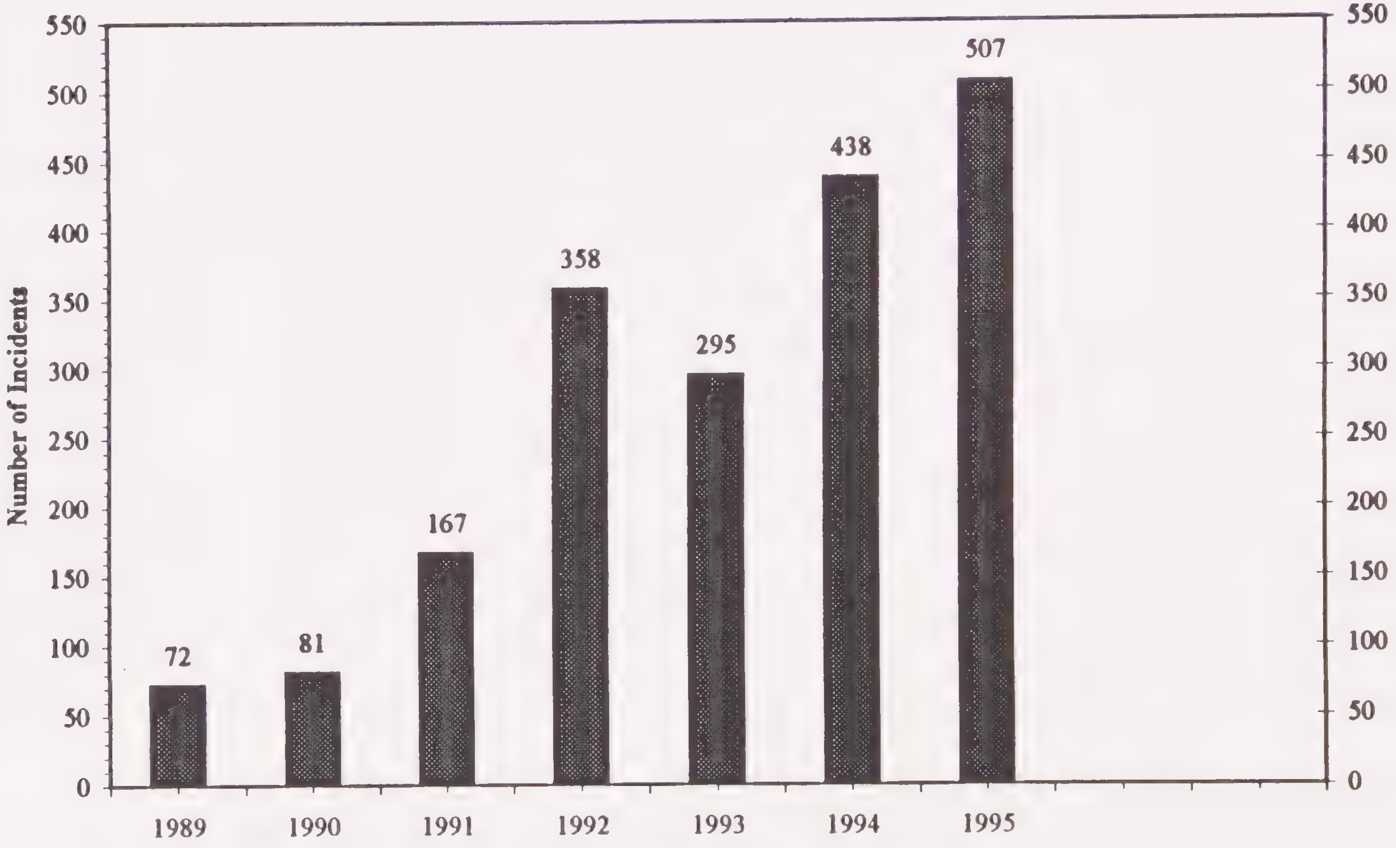


Figure 2

Number of Incidents at Major Industrial Facilities
In Contra Costa County: 1989 - 1995

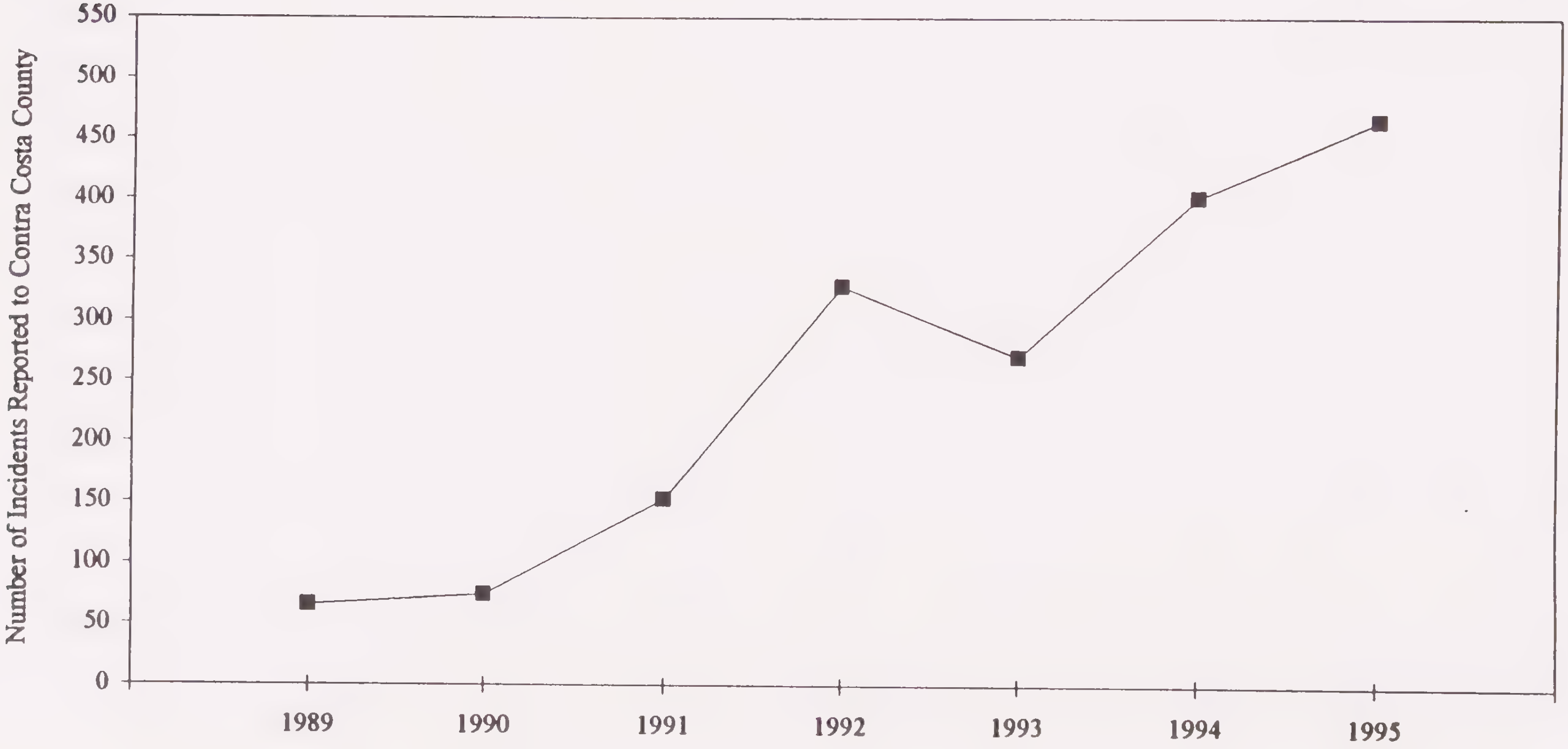


Figure 3
Number of Incidents at Major Industrial Facilities in Contra Costa County: 1989-1995

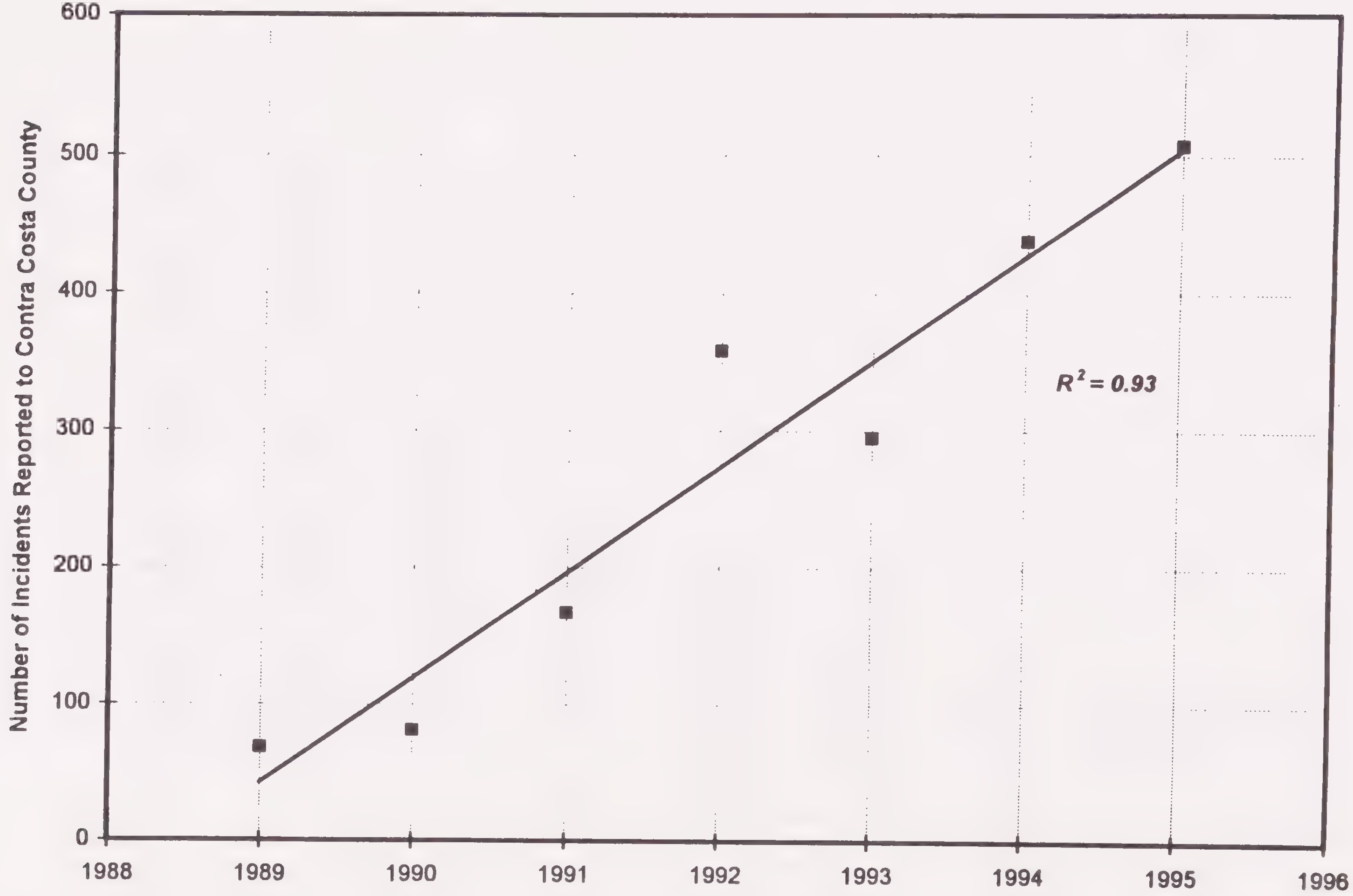
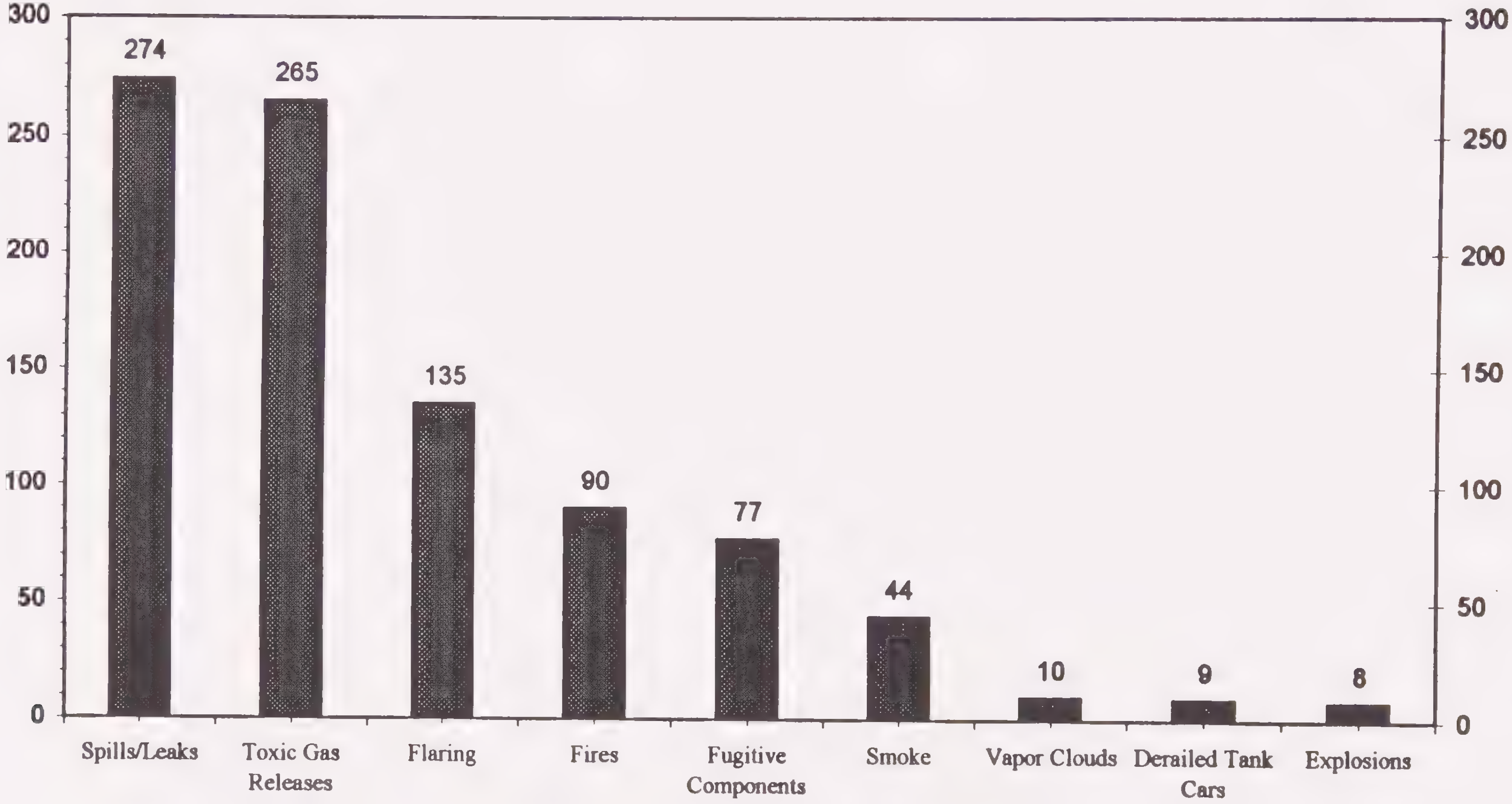


Figure 4

Types Of Incidents At Major Industrial Facilities in Contra Costa County: 1992 - 1995



B. Types Of Accidents

The most common types of accidents in the County are spills and leaks, toxic gas releases, flaring, and fires. Between 1992 and 1995, 1,598 incidents occurred at major industrial facilities in Contra Costa County. Among these, 274 or 17 percent of the total were spills and leaks, 265 or 17 percent were toxic gas releases, 135 or 8 percent were flaring events at refineries, and 90 or 6 percent were fires. Derailed tank cars, explosions, releases of smoke, odor, and breakdowns of pumps, compressors, valves and other fugitive components were also reported. (Figure 4.)

The types of accidents posing the most significant risk to public health and safety are the toxic gas releases. Even small toxic gas releases will typically travel beyond the confines of the plant, contaminating the air breathed by the public.

The release of catalysts compounds, such as Chevron Dec. 1991 and Unocal Catacarb 1994, has also been a significant risk to the public. Catalytic compounds contain heavy metals, particulates, and other chemicals known to pose a danger to public health even in small quantities. Catalysts are not considered acutely hazardous, although exposure can cause immediate health problems and may result in long term impacts. Chemical releases through pressure relief valves that vent toxics directly to the air, rather than to containment systems, have resulted in serious accidents. Although the Bay Area Air District has considered a regulation to prevent these releases for years, no action has been taken and no date for adoption has been set.

Flaring, in which accidental releases of gases are only partially combusted (depending on various limiting factors including the temperature, time, and turbulence of winds) can be a major source of smoke, soot, odor, noise and vibration into surrounding neighborhoods. Fires release large quantities of smoke, soot, and hazardous chemicals such as cyanides, dioxins, and polynuclear aromatic hydrocarbons. These materials can leave unsightly deposits on personal property and cause adverse health affects.

Most of the spills and leaks occurred at oil refineries. The most commonly spilled substances were hydrocarbon materials, including diesel, gasoline, and various oils. Other commonly spilled materials include sulfuric acid and hydrochloric acid. These spills and leaks may impact on-site workers or contaminate surface waters and groundwaters, which may, in turn, jeopardize public health and safety if the contaminants travel off site.

C. Toxic Gas Releases

Contra Costa County stores about 123 million pounds of toxic, explosive, and highly corrosive chemicals (Table 3), often in close proximity to population centers, and is second only to Los Angeles County in the quantity stored. The majority of these chemicals are stored at ten chemical plants and refineries. (Table 4.)

Table 3

TOXIC CHEMICALS STORED IN CONTRA COSTA COUNTY

CHEMICAL	USES	AMOUNTS Pounds
Sulfuric Acid	Used to make fertilizers, metal cleaners, explosives; and in refining and manufacturing	82,791,024
Oleum (fuming sulfuric acid)	Used in the soap and electronics industry	15,840,000
Carbon Disulfide	Used as a solvent for waxes and resins; as a disinfectant, an insecticide; and in manufacturing rubber and artificial fibers	8,100,810
Ammonia	Produced as a byproduct of refining; used as a feedstock in fertilizers and in pollution control equipment	5,921,797
Nitric Acid	Used to make fertilizers and explosives	4,826,426
Chlorine	Used in solvents and cleaning agents	2,411,947
Hydrogen Fluoride	Used in the petrochemical, glass, porcelain, chemical manufacturing and semiconductor industries as a catalyst or etcher	1,290,000
Phenol	Disinfectant; corrosive; used in refining	1,050,215
Sulfur Dioxide	Combustion byproduct of burning petrochemicals; used to make sulfuric acid	669,109
Hydrogen Sulfide	A byproduct of refining	617,434
TOTAL		**123,518,762**

Table 4

CHEMICAL STORAGE LOCATIONS

COMPANY	POUNDS
Rhone-Poulenc (Martinez)	39,045,475
Tosco Refinery (Avon)	30,905,748
General Chemical (Richmond)	17,260,000
Zeneca (Richmond)	8,190,000
Chevron Refinery (Richmond)	7,894,115
General Chemical (Bay Point)	4,913,000
Chevron Chemicals (Richmond)	4,000,000
Shell Refinery (Martinez)	3,352,457
DuPont (Antioch)	2,537,000
Unocal Refinery (Rodeo)	1,516,734
TOTAL	**119,614,529**

Accidental release of these chemicals is the second most common type of accident that occurs in Contra Costa County. Between 1992 and 1995, 265 accidental releases of toxic gases were reported to the County. Most of these were from Dow Chemical and the refineries. The most commonly released chemicals were hydrogen sulfide, chlorine, sulfur dioxide, hydrochloric acid, and sulfur trioxide. (Table 5.) All of these chemicals are acutely hazardous materials.

Table 5

CHEMICALS INVOLVED IN TOXIC GAS RELEASES AT MAJOR INDUSTRIAL FACILITIES

SUBSTANCE	NUMBER OF RELEASES					FRACTION
	1992	1993	1994	1995	TOTAL	
Hydrogen Sulfide	11	5	9	11	36	0.14
Chlorine	16	5	5	7	33	0.12
Sulfur Dioxide	4	7	10	5	26	0.10
Hydrochloric Acid	7	6	3	5	21	0.08
Sulfur Trioxide	0	6	7	8	21	0.08
Unknown	5	5	2	4	16	0.06
Hydrogen	5	2	4	3	14	0.05
Hydrocarbons	8	3	1	2	14	0.05
Ammonia	3	2	5	4	14	0.05
Nitrogen Oxide	2	1	1	8	12	0.05
Propane	5	2	1	2	10	0.04
Carbon Tetrachloride	2	2	0	4	8	0.03
Natural Gas	0	4	1	2	7	0.03
Perchloroethylene	3	2	0	1	6	0.02
Butane	2	2	1	0	5	0.02
Hydrofluoric Acid	5	0	0	0	5	0.02
Ethylene Oxide	2	2	0	0	4	0.02
Chlorinated Pyridines	0	0	0	4	4	0.02
Freon	0	0	0	3	3	0.01
Butadiene	1	0	0	0	1	0.00
Phenol	0	1	0	0	1	0.00
Catacarb	0	0	1	0	1	0.00
Dimethyl Disulfide	0	0	1	0	1	0.00
Chloroform	0	0	0	1	1	0.00
Monomethylamine	0	0	0	1	1	0.00
Titanium Chloride	0	0	0	1	1	0.00
Gasoline	0	0	0	1	1	0.00
TOTALS	**81**	**57**	**52**	**75**	**265**	**1.00**

Hydrogen sulfide is a byproduct of refining, and most of the hydrogen sulfide releases were from refineries. Hydrogen sulfide is a malodorous gas that smells like rotten eggs and is a common source of odor complaints around refineries. Exposure of the general population to low concentrations of hydrogen sulfide causes headache, nausea, vomiting, diarrhea, abdominal cramps, shortness of breath, choking, coughing, sore throat, chest pain or heaviness, burning eyes, fainting, nervousness, fever, awakening

at night, loss of sleep, acute asthma attacks, anorexia, and weight loss. Exposure to high concentrations paralyzes the respiratory center and is instantly fatal.

Chlorine is used for water treatment and in chemical manufacturing. It is extremely irritating to the mucous membranes of the eyes and the respiratory tract and in moist air or fogs, it combines with water to form hydrogen chloride. Most of the chlorine releases were from Dow Chemical. Exposure to low concentrations causes burning eyes, scratchy throat, coughing, and shortness of breath. Exposure to high concentrations causes respiratory distress, pulmonary edema, and death.

Sulfur dioxide is a byproduct of refining and is also used to make sulfuric acid. Sulfur dioxide is corrosive and poisonous and in moist air or fogs, it combines with water to form sulfurous acid. Low concentrations of sulfur dioxide cause irritation of mucous membranes, throat, esophagus, eyes and skin, chronic cough, constriction in the chest, fatigue, altered sense of smell, symptoms of chronic bronchitis, bronchial asthma, prolongation of common colds, and breathing difficulties including shortness of breath. Exposure to high concentrations may cause edema of the lungs, respiratory paralysis, and death.

Hydrochloric acid is moderately irritating to the mucous membranes of the eyes, the respiratory tract, and the throat. High concentrations result in pulmonary edema, laryngeal spasm, and death. Sulfur trioxide combines with moisture in the atmosphere to form sulfuric acid. It is a corrosive poison that is highly irritating to skin, eyes, and mucous membranes.

D. Health Impacts

Exposure to any *one* of the toxic gases described above could cause serious health effects, however, industrial communities do not risk exposure to just one chemical or even one toxic release. Rodeo/Crockett/Tormey residents may have been exposed to 474 chemical releases from the Unocal refinery and 86 spills from the Pacific refinery, involving dozens of chemicals over a six year period.

Although we know some of the health effects of exposure to a single chemical, very little is understood about the impact of repeated exposures to a variety of harmful toxics. When exposure to daily pollution coming from industrial plants is added to constant accidental releases, fires and explosions, there is little doubt that it is undesirable. Children, in particular are at risk from toxic releases because of their smaller size and developing bodies.

The information produced by the Pacific Refinery Health Survey Review (August 5, 1992) is illustrative of the kind of impacts industrial operations have on surrounding neighborhoods. In a formal survey of neighbors, the Bay Area Air Quality Management District took legal declarations of the neighbors under penalty of perjury. Dr. Walker, Medical Director of the Contra Costa County Health Services Department, reviewed the material and found good evidence that the neighbors' health problems were being caused by the refinery's air pollution.

> "There is striking consistency among the types of acute health effects complained of by the declarants. Many of the declarants complain of headaches, sore throats, coughing and nausea resulting from the odors and emissions from Pacific Refining Company. Some, who have pre-existing asthma conditions, complain of exacerbation of those symptoms due to the refinery's emissions. These are exactly the kind of acute symptoms which one might expect to result from significant odor and emission releases from an oil refinery. ... "

Dr. Walker also evaluated the reliability of the data based on the representiveness of the sample group of declarants:

> "Even though the group of declarants constitutes a self-selected group, there is a remarkable specificity, consistency, and time-relatedness in the declarations taken as a whole. For this reason, I believe that these declarations provide credible and reliable evidence that the periodic odor and emission releases from Pacific Refining Company are causing acute health effects in the Rodeo community. People do not generally present in these large numbers in a single community this specific range of health complaints unless there is a common inciting factor, which in this case I believe is environmental."

E. Examples of Major Accidents

Since 1989, a substantial number of accidents have occurred in Contra Costa County that have resulted in significant impacts to either workers or surrounding communities. These impacts have included deaths, injuries, illnesses, school closures, bridge and highway closures, evacuations or other significant releases of hazardous materials or wastes. These accidents and their impacts are briefly summarized in Tables 6 and 7. Six of these accidents are discussed in more detail below.

Chevron Isomax Fire (4/10/89). While the Isomax Unit was being shutdown for steam cleaning, a pipe carrying highly flammable hydrogen developed a leak, and the resulting hydrogen cloud ignited. Two large explosions and a fire resulted, causing the 100-foot high reactor in the Isomax Unit to collapse. Over 150 firefighters from Chevron, other refineries, and the City of Richmond struggled to keep the blaze under control, which burned for six days. A Cal/OSHA report concluded that Chevron had knowingly endangered workers by failing to provide protective fire gear and had not inspected the leaky pipe for 23 years despite an industry-wide tendency for pipes to corrode.

Nine workers were injured and sent to local hospitals, three of whom were severely burned. Dense black smoke was visible as far away as San Francisco and Martinez and drifted into nearby neighborhoods and east across the hills of El Cerrito and Berkeley. Hundreds of people, primarily from El Sobrante Valley, San Pablo and North Richmond, complained to Richmond city offices and the Bay Area Air Quality Management District about odor, smoke, and soot. About 275 children were evacuated from Verde Elementary School.

Shell Catalytic Feed Hydrotreater Fire (9/5/89). A vapor line in the Catalytic Feed Hydrotreater leaked hot hydrogen and hydrocarbon gases, which ignited almost immediately. The fire caused liquid lines in the area to fail, resulting in ground fires. A major explosion, about a dozen minor explosions, and a fireball erupted in the midst of the conflagration. The fire burned for two days.

Two contract workers were sent to a local hospital with second-degree burns over about 25 percent of their bodies. The blast from the explosion was heard up to 7 miles away in Benicia. The blaze released a thick black cloud, which drifted east over parts of Martinez, Avon, and Pittsburg. Some residents evacuated the area, and numerous odor and smoke complaints were lodged with local agencies.

Chevron Catalyst Release (12/5/91). A malfunctioning microprocessor caused a valve, which should have remained open, to shut inadvertently, causing pressure to build up inside a refining unit. The pressure forced about 60 cubic yards of nickel-laden catalyst to be emitted through the unit's exhaust stack. Winds carried the resulting dust clouds south over Point Richmond, where the catalyst dust settled onto cars, roads, and homes and throughout a 16 square mile area. Over 500 people responded to a community health survey complaining of respiratory problems.

The County used the Community Alert Network (CAN) emergency notification system for the first time in an effort to protect the public. However, timely warning was hampered by the company's delay in acknowledging the harmful toxic dust clouds had crossed the fenceline.

Community outrage over the incident resulted in numerous heated public meetings, including one on Chevron's Risk Management and Prevention Program ("RMPP"). At that meeting County health officials generally agreed with Chevron management that the company's accident prevention measures were adequate, despite strong objections from community groups. County Health staff, however, publicly admitted that gaps existed in the RMPP process, which did not cover chemical releases involving toxics not classified as "acutely hazardous."

Twice in 1992, hundreds of local residents marched to the main gate of the refinery demanding stronger regulations and community oversight. Neither Chevron or government agencies took significant action to prevent future accidents. Instead, industry and agencies focused on improving emergency notification systems, rather than focusing on preventing them in the first place.

Rhone-Poulenc Acid Fire (6/22/92). An estimated 135,000 gallons of sulfonation acid sludge spilled from a broken valve on a 5-foot-deep storage tank. The sludge, a highly flammable mixture of sulfuric acid and up to 25 percent petroleum products, caught on fire.

One worker was killed, another was seriously injured, and 15 firefighters were treated for sulfuric acid burns and smoke inhalation. Black smoke and an acid cloud covered parts of Central County, closed local freeways, caused residents to complain of headaches, nausea, burning eyes and sore throats, and damaged the paint on vehicles.

Despite the widespread impacts of the release, the plant manager told a special meeting of the Martinez City Council the next day that there were "no off-site impacts." Following a series of public protests led by Communities for a Safe Environment, the company abandoned a controversial plan to operate a commercial hazardous waste incinerator at the site.

General Chemical Oleum Spill (7/26/93). In late June of 1993, the General Chemical plant in Richmond shut down to modernize its facility. During modifications, oleum, a mixture of sulfur trioxide and sulfuric acid, was temporarily stored in tanker rail cars. Workers had never unloaded oleum from a tank car at this facility before and received no special training prior to the Bay Area's worst chemical disaster to date.

Oleum, which freezes at 84 F, must be heated to liquify it before it can be unloaded. The oleum was heated with steam in preparation for unloading. However, the railcar overheated because workers were not properly trained and the railcar was not equipped with gauges and thermometers needed to monitor temperature and pressure inside the tank. This caused a pressure vent on the car to rupture.

About 4 tons of sulfur trioxide were emitted from the pressure vent into the air over a 3 hour period. A cloud of sulfur trioxide and sulfuric acid drifted northeast of the plant along the Interstate 80 corridor from Richmond to Crockett. More than 24,000 residents and commuters were sent to local hospitals complaining of burning eyes, sore throats, and respiratory ailments. Twenty people were hospitalized.

The Bay Area Air Quality Management District and the Contra Costa County Health Services Department fined General Chemical 1.18 million dollars for the accident, which included $600,000 for a health clinic and $200,000 for a mobile health van for North Richmond. More than 45,000 plaintiffs have filed 54 lawsuits seeking compensation for injuries suffered during the spill.

Unocal Catacarb Release (8/22/94). About 100 tons of catacarb escaped from a small hole near the top of a 150-foot regenerating tower in the Hydrogen Plant of the Unicracker between August 22 and September 6, when the unit was shutdown. Catacarb is an alkaline solution used to purify hydrogen and contains potassium carbonate, potassium borate, diethanolamine, and a trace amount of potassium metavandate and polyhydroxy alcohol. Government investigations revealed that Unocal kept the equipment operating despite worker warnings of the risks. Unocal also failed to adhere to Company policies regarding accident response and notification. Unocal had delayed repairs to the unit until a scheduled turnaround in October, running the equipment six months longer than originally planned.

Airborne catacarb fell over the town of Crockett, unincorporated Tormey and the Wickland Oil Terminal, forming a sticky brown residue on exposed property, including vehicles and lawns. Over 1500 people sought treatment at a local Good Neighbor Clinic for symptoms which included more serious health problems. These people were diagnosed with diarrhea, vomiting, headaches, allergies, brain damage, memory loss and cognitive disorder. Many are still sick a year and a half later.

Table 6
EXAMPLES OF MAJOR ACCIDENTS IN CONTRA COSTA COUNTY: 1989 - 1996

DATE	FACILITY	INCIDENT
4/10/89	Chevron	A major fire and explosion occurred in the Isomax Unit due to a hydrogen leak. Nine workers were injured and 3 seriously burned. 275 children were evacuated from Verde Elementary. Black clouds of smoke poured into surrounding community for 6 days.
9/5/89	Shell	A major fire and 3 explosions occurred in the Catalytic Feed Hydrotreater. Odor, smoke, and fallout was experienced in the surrounding community. Two contract workers were severely burned, and windows rattled up to 7 mi from the refinery.
10/23/90	Dow	A cloud of hydrochloric acid was released from an overflow of a tank.
1/4/91	Shell	The LDU Lube Crude Heater had a tube failure. Some 700 gal of oil leaked into the firebox and burned for over 2 hrs. Dense smoke and odor invaded parts of Martinez.
2/1/91	Dow	40 lbs of chlorine and 300 lbs of liquid pyridines leaked from a faulty gasket, causing odor in the surrounding community.
5/5/91	Dow	400 lbs of chlorine and 880 lbs of carbon tetrachloride gas were released from a tank, injuring 6 workers.
6/25/91	Dow	700 lbs of liquid chlorine leaked from a faulty valve, sending 30 workers to hospitals and clinics. High winds dissipated the cloud offsite.
10/29/91	Chevron	A fire in the Catalytic Cracking Unit sent black clouds of smoke over much of the Bay Area and forced toll takers to evacuate the Richmond-San Rafael Bridge.
12/5/91	Chevron	40-tons of catalyst dust was released from the Catalytic Cracking Unit and blanketed Pt. Richmond and surrounding areas, requiring massive cleanup. Additional catalyst was released while restarting the unit on 12/6/91.
1/30/92	Tosco	A refinery tank spilled 1,894 barrels of diesel, which was trapped in a containment ditch. Tosco paid a $20,000 penalty to the county for failing to immediately report the spill.
5/29/92	Pacific Refining	While the refinery was shut down due to a leak in the cooling tower, the flares overloaded and were unable to burn off all of the released material. As a result, water, soot and chemicals spewed onto homes in
6/22/92	Rhone-Poulenc	A faulty valve leaked 135,000 gal of sulfuric acid sludge, which caught on fire killing one worker and severely injuring another. An acid cloud covered parts of Concord, West Pittsburg and Martinez.

Table 6 (continued)

DATE	FACILITY	INCIDENT
6/23/92	Chevron	A pump failure in the Catalytic Cracking Unit released a foul-smelling cloud. Yellow smoke engulfed parts of Richmond.
7/29/92	Texaco	One worker died and another was seriously injured when a high-pressure hose burst and sprayed them with crude oil.
8/13/92	Tosco	A refinery fire triggered an explosion heard for miles. One worker was treated for burns at a hospital and released.
8/22/92	Electro Forming	A leaking nitric acid tank send a plume of acid over Richmond, sending 100 people to hospitals.
9/20/92	Tosco	A power failure caused flaring, which sparked a small grass fire. Smoke and odors were experienced in West Pittsburg.
12/11/92	Tosco	A flare released a nauseating odor that irritated people in a large area of Concord and prompted Pine Hollow Intermediate School to send students home.
3/7/93	Tosco	A butane leak created a brown cloud of unburned hydrocarbons that covered parts of Martinez. No health problems were reported.
4/1/93	Shell	An explosion in a sludge storage tank rocketed the metal lid onto power lines, causing power outages to about 1000 PG&E customers
6/18/93	Tosco	300,000 lbs of hydrocarbons and 1,600 lbs of H2S were released from a pressure relief valve, causing odors throughout Clyde, Bay Point, Pittsburg, Antioch and Oakley. 300 people complained of odors, nausea, headaches and eye and respiratory irritation.
7/26/93	General Chemical	About 4 tons of SO3 (oleum) was released from an overheated rail car. A large plume of sulfuric acid formed over Richmond sending about 24,000 people to local hospitals
10/7/93	Tosco	2000 gallons of oil were dumped into Hastings Slough. EPA fined Tosco $125,000
10/8/93	Shell	An acid tank exploded and sent a fireball into the sky. The explosion and fire were caused by water that leaked into an acid storage tank.
2/10/94	Chevron	A power outage in the Sulfur Recover Unit resulted in the release of many tons of sulfur and other compounds.
3/10/94	Chevron	An instrument failure caused the release of large quantities of hydrogen sulfide from the flares. Residents as far away as El Sobrante complained of illness.
8/22/94	Unocal	100 tons of catacarb was released over a 16 day period from a regenerating tower in the Unicracker Complex, resulting in a sticky/greasy fallout throughout the Crockett area and causing hundreds of residents and workers to become ill.
9/15/94	Unocal	A compressor failure released hydrogen sulfide, causing 80 school children at Hillcrest Elementary to seek medical attention.

Table 6 (continued)

DATE	FACILITY	INCIDENT
6/17/95	Unocal	A tank fire lasted 3 hrs, causing the evacuation of about 200 families in Crockett, many for over a week due to ongoing fumes.
9/25/95	Tosco	Pollution control equipment was bypassed when a boiler malfunctioned, releasing a large cloud of coke dust, carbon monoxide, and hydrocarbons.
9/27/95	Pacific	Faulty shutdown cleaning procedures resulted in the release of naphtha and sulfur compounds. Disabled children were evacuated by ambulance from schools.
2/1/96	Shell	A powerful explosion in the new Hydrogen Unit operated by the Shell contractor Air Products results in worker evacuation, houses being rattled several miles away, and a huge cloud of burning hydrogen visible for miles.
4/1/96	Shell	An explosion and major fire that burned out of control for 3 hrs occurred in the Catalytic Feed Hydrotreater. A large smoke cloud blanketed the surrounding community.
4/20/96	Shell	A fire and explosion occurred while draining oil from a process unit into the sewer. Workers report that "hot" sewers have been an ongoing risk for several months in the area causing the cancellation of "hot work" permits.
5/17/96	Unocal	A major fire in the Coker lasted 3.5 hrs and was caused by workers switching the wrong valve, sending hot oil into the coke pit. Workers claim that Unocal repeatedly rejected recommendations for simple engineering changes made during internal safety review over five years before.

Table 7

EXAMPLES OF ACCIDENTS CAUSING INJURIES OR ILLNESS, SCHOOL OR BRIDGE CLOSURE, EVACUATION OR CONFINEMENT OR OTHER SIGNIFICANT IMPACTS

EXAMPLES OF ACCIDENTS CAUSING INJURIES OR ILLNESS

- Chevron Fireball 4/10/89 (nine workers injured, three seriously burned)
- Shell Light Oil Process Explosion 9/5/89 (Two contract workers severely burned)
- Dow Chlorine and Carbon Tectrachloride Release 5/5/91 (Six workers injured)
- Dow Chlorine Release 6/25/91 (Thirty workers sent to hospitals and clinics)
- Chevron Catalyst Release 12/5/91 (people ill with diarrhea, breathing problems, rashes)
- Pacific Flare Overload 5/29/92 (Water, soot and chemicals spewed onto Rodeo homes. At least three citizens sought hospital treatment)
- Rhone-Poulenc Sulfuric Acid Sludge Release and Fire 6/22/92 (one worker killed, another severely burned)
- Tosco Fire and Explosion 8/13/92 (Explosion heard for miles, one worker sent to hospital for burns)
- Electro Forming Acid Release 8/22/92 (Over 100 people sent to hospitals)
- Tosco Pressure Relief Valve 300,000 lbs. Release 6/18/93 (Several people sent to hospital with burning eyes, shortness of breath)
- General Chemical Oleum Release 7/26/93 (20,000 people sought hospital treatment)
- Chevron H2S Gas Release 3/10/94 (people as far as El Sobrante complain of illness)
- Unocal Catacarb Toxic Chemical Release 8/22/94 (Over 1,500 people treated over following year)

Table 7 (continued)

EXAMPLES OF ACCIDENTS CAUSING INJURIES OR ILLNESS (continued)

- Unocal H2S Release 9/15/94 (80 nearby schoolchildren sought medical attention)
- Pacific Refinery Naptha, Sulfur Release 9/27/95 (Disabled children from nearby school evacuated by ambulance)
- Shell Hydrogen Unit Explosion 2/2/96 (Resulted in worker evacuation; two workers suffered minor injuries)
- Shell Explosion and Fire 4/1/96 (Large smoke cloud blanketed surrounding community)

EXAMPLES OF ACCIDENTS CAUSING SCHOOL CLOSURES

- Chevron Fireball 4/10/89 (275 elementary school children evacuated)
- Tosco Flare Release 12/11/92 (Nauseating odor in large area of Concord resulting in Pine Hollow Intermediate School sending students home)
- Pacific Refinery Naptha, Sulfur Release 9/27/95 (Evacuation of disabled children by ambulance from nearby school)
- Unocal Coker Fire 5/17/96 (Prompted schools to close; residents warned to stay inside)

EXAMPLES OF ACCIDENTS CLOSING BRIDGES OR FREEWAYS

- Chevron Oil Leak Fire 10/30/91 (Richmond-San Rafael bridge evacuated)
- Rhone-Poulenc Sulfuric Acid Sludge Release and Fire 6/22/92 (freeway temporarily closed)

EXAMPLES OF ACCIDENTS CAUSING EVACUATION OR CONFINEMENT

- Chevron Catalyst Release 12/5/91 (County residents warned to stay indoors)
- Chevron Pump Failure Release 6/23/92 (County residents warned to stay indoors-Same unit as 10/31 and 12/5/91 events)

Table 7 (continued)

- Unocal Tank Fire 6/17/95 (200 Crockett families forced to evacuate area for over a week)
- Unocal Coker Fire 5/17/96 (Prompted schools to close; residents warned to stay inside)

EXAMPLES OF ACCIDENTS RESULTING IN SIGNIFICANT RELEASES

- Dow Hydrochloric Acid Release 10/23/90 (Cloud of hydrochloric acid released from overflow of tank)
- Shell Heater Fire 1/4/91 (Dense smoke invaded parts of Martinez)
- Dow Chlorine Release 2/1/91 (40 lbs. of chlorine and 300 lbs. liquid pyridines leaked causing odor in community)
- Tosco Diesel Spill 1/30/92 (Trapped in containment ditch; Tosco failed to immediately report to County)
- Pacific Flare Overload 5/29/92 (Water, soot and chemicals spewed onto Rodeo homes. At least three citizens sought hospital treatment.
- Tosco Flaring Incident 9/20/92 (Caused small grass fire, smoke and odors experienced in West Pittsburg)
- Tosco Butane Leak 3/7/93 (Butane leak created brown cloud which covered parts of Martinez)
- Shell Sludge Tank Explosion 4/1/93 (Caused power outages to about 1000 PG&E customers)
- Tosco Oil Spill 10/7/93 (2000 gallons oil dumped into Hastings Slough)
- Shell Fireball 10/8/93 (fireball in sky could be seen for miles)
- Chevron Power Outage and Release 2/10/94 (Power outage resulted in release of many tons of sulfur and other compounds)

Table 7 (continued)

- Tosco Release 9/25/95 (Boiler malfunction causes release of large cloud of coke dust, carbon monoxide, and hydrocarbons)
- Shell Fire and Explosion 4/20/96 (Small fire and explosion while draining oil from process unit into sewer)

III. PROPOSED "GOOD NEIGHBOR" SOLUTIONS TO EXISTING REGULATORY GAPS

A. Need for Effective County Land Use Review of Industrial Construction, Repair and Maintenance Projects Involving Hazardous Materials or Hazardous Wastes

The accidents at major industrial facilities reviewed in Section II dramatically demonstrate that the current regulatory framework has not been effective in minimizing accidents and hazardous materials releases from industrial facilities in Contra Costa County. Indeed, the statistical evidence shows that the number of accidents and releases is dramatically increasing. (Figure 3.)

The petroleum refineries, chemical plants and other heavy industrial facilities handling hazardous materials and hazardous wastes are subject to a patchwork of existing regulatory programs. The gaps and limitations in these programs, however, combined with problems of compliance and enforcement, have undermined the effectiveness of the current regulatory structure in reducing major accidents and releases of hazardous materials.

Industry often cites the Risk Management and Prevention Program ("RMPP") and process safety management ("PSM") standards to argue that additional County regulation is unnecessary. However, both RMPP and PSM standards are limited to acutely hazardous materials, and do not apply at all to a wide range of facilities handling extremely toxic chemical compounds. Even with respect to acutely hazardous materials, the RMPP requirements apply only if the Administering Agency determines that there is a significant likelihood that the facility's use of the material poses an acutely hazardous materials accident risk. Even then, a facility may still apply for exemption from the RMPP process. The PSM standards also apply only to the handling of acutely hazardous materials. No effective compliance or enforcement of either program currently exists. Other state and federal regulatory programs have also proven ineffective. (See Tables 8, 9 and 10.)

Table 8

LIMITATIONS ON RISK MANAGEMENT PREVENTION PROGRAMS (RMPPs) AND HAZARD AND OPERABILITY STUDIES (HAZOPs)

- Only applies to *acutely* hazardous materials (e.g., catacarb, hazardous waste not covered).
- No review of RMPP and HazOp at public hearing.
- RMPP and HazOp need not evaluate risks to on-site persons.
- RMPP is certified as in compliance by the facility operator and a privately employed expert.
- Local agency review of RMPP is limited to whether it is deficient. Its ability to impose additional safety measures on facility is severely restricted.
- According to County Health Department, HazOps are not available to public.
- No effective program for enforcing or monitoring a facility's compliance with the RMPP —— County has only reviewed 30 RMPPs since program enacted in 1986.

Table 9

LIMITATIONS ON PROCESS SAFETY MANAGEMENT STANDARDS

- Only applies to *acutely* hazardous, flammable, or explosive chemicals (e.g., catacarb, hazardous waste not covered).
- Need not consider risks to off-site persons.
- No review of PSM at public hearings.
- Facility has broad discretion to determine appropriate level of hazard analysis based on factors such as system "complexity," number of employees exposed, extent of hazards, and operating history.
- Facility performs the pre-startup safety review and determines whether safety procedures are adequate.

Table 9 (continued)

- Facility performs inspections and testing.
- Facility organizes the incident investigation team and reports results to Cal-OSHA.
- Hazard analysis need only be updated every 5 years.
- Cal-OSHA has planned inspections only 20 facilities statewide. Other inspections by complaint only.

Table 10

LIMITATIONS ON EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT - EMERGENCY RESPONSE PLANS

- Only applies to extremely hazardous substances.
- Focuses on community's response to hazardous chemical emergencies, not prevention of such emergencies.
- Facility merely submits list of hazardous chemicals used to local emergency planning committee and identifies an emergency coordinator; the committee develops the response plan.
- Local government agency coordinator is designated by the state emergency response commission (*i.e.*, could be the Fire Department, County Health Department, etc.).
- Facility has 60 days after using a new extremely hazardous substance to notify relevant agency.

Table 10 (continued)

LIMITATIONS ON FEDERAL CLEAN AIR ACT - RISK MANAGEMENT PLANS

- Only applies to extremely hazardous substances and certain regulated hazardous pollutants.
- Risk Management Plan requirements have not yet been established. U.S. EPA published proposed regulations in October, 1993 and again in March, 1995 -- still not final.
- Proposed requirements similar to California's RMPP program.
- Enforcement mechanism is EPA (or Bay Area AQMD) audits and safety inspections; no local enforcement.

Until recently, oil refineries and other major industries in the County were not subject to *any* local land use permitting requirements. While a three-foot retaining wall in a residential backyard requires a County permit and inspection, a billion-dollar refinery modernization could be carried out without even a local building permit. Although the new Hazardous Materials Ordinance enacted by Contra Costa County is a step in the right direction, the Commission had been working under a limited charge and the Ordinance fails to address a number of operational issues that have led to recent accidents, and would leave important gaps in the regulation of these facilities.

The proposed "Good Neighbor" amendments to the Hazardous Materials Ordinance are intended to reduce the risk of accidents and toxic releases by making existing safety programs more effective, and by filling gaps in the current regulatory structure. The "Good Neighbor" amendments would: 1) expand the range of projects made subject to review and regulation; 2) increase public disclosure of risks from facility accidents and releases; 3) improve incident reporting and investigation in order to facilitate accident prevention planning; 4) require special safety measures and inspections to reduce hazards associated with high pressure and high temperature operations; and 5) require findings based on specific health and safety criteria prior to project approval.

The deficiencies and gaps in existing regulation and the proposed "Good Neighbor" solutions are discussed in more detail below.

B. Need to Expand Range of Projects Subject to Review

1. Restricted definition of "development project" would leave major projects unregulated

The definition of "development project" under the new Ordinance would allow major projects to go unregulated. For example, the Ordinance does not cover any facility modifications, replacement, repair or maintenance projects unless the project results in an increase in design capacity. The Ordinance also exempts pipelines and related equipment more than 300 feet from residential or commercial property.

The narrow project definition in the new Ordinance would exclude a broad range of projects and would allow major industrial projects to be carried out without any County land use review. As we know from the recent retooling of refineries to produce cleaner fuels, modification and modernization projects can involve literally billions of dollars in work and can subject workers and surrounding communities to potentially significant risks. These risks are present whether or not the work results in an expansion of facility design capacity.

The "Good Neighbor" amendments would extend review to major repair, replacement and modernization projects whether or not the project would increase facility capacity. The amendments would also delete the current exemption for pipeline projects. Finally the proposal would repeal the special building permit exemption for projects at industrial facilities.

2. Failure to include "turnaround maintenance" leaves a major gap in current regulations

The Coalition believes that the exemption of major maintenance work in the new Ordinance leaves a critical gap in the current regulatory framework. "Turnaround maintenance" refers to the shutdown of oil refinery operating units to perform periodic inspection, maintenance and repairs.

The operating schedules for the various refinery units are typically developed a year or two in advance and will specify the shutdown periods for turnaround maintenance. The length of the shutdown period will depend on the maintenance work scheduled during the turnaround, which can vary from cleaning, inspection and minor repair to a comprehensive safety check and preventative maintenance, equipment overhaul and construction of new facilities. Because refineries cannot keep a permanent staff large enough to handle major turnarounds, outside contract labor is typically brought in for this work.

Increased competition and marketing demands have created significant tension between refinery operating and maintenance schedules. Unit shutdown for regular

inspection and preventative maintenance is essential for safe operation of the facility, however, taking units off-line means less product for sale. These factors have led to longer and longer operating runs of process units. (Bland and Davidson, *Petroleum Processing Handbook*, McGraw-Hill 1967, pp. 7-14, 7-32.)

In addition, the shutdown and startup of process units for inspection and maintenance is one of the most dangerous periods in refinery operations, and must follow careful procedures in order to ensure the safety of plant personnel and adjacent communities. The reports on a number of recent accidents in Contra Costa County demonstrate a link between accidents and turnaround projects or other maintenance activities, including inadequate inspection and maintenance, increasing demands on refinery equipment and mishaps during unit shutdown or startup. (See Table 11.)

TABLE 11

EXAMPLES OF ACCIDENTS CAUSED BY INADEQUATE MAINTENANCE/CORROSIONAND/OR INADEQUATE INSPECTION

4/10/89	Chevron Isomax Fire. OSHA report indicates that leaky pipe had not been inspected for twenty-three years and workers were not provided with adequate protective fire gear. Two injured workers blame faulty equipment, and an emergency switch that had been out of order for at least a year.
10/7/93	Tosco Acid Leak. Pipe segment had been repaired and replaced after a leak three years prior. Tosco had problems with same pipe three years earlier as welder was preparing to finish a weld seal.
2/2/96	Shell Hydrogen Unit Explosion. Air Products state pipe burst due to stress corrosion cracking.
4/1/96	Shell Explosion and Fire. Company officials indicate cause was pipe failure and failure to inspect all similar pipes. According to Contra Costa Times, pipe corrosion led to fire.

Table 11 (continued)

EXAMPLES OF ACCIDENTS RELATED TO MAINTENANCE/REPAIR WORK

5/29/92	Pacific Release. Fire caused while workers trying to repair leak in tubing. Company had shut down unit for repairs. County and BAAQMD criticize Pacific for failure to notify earlier of potential problem.
6/17/95	Unocal Tank Fire. Unocal stated fire started when maintenance crews installed new roof seal on tank. Unocal documents indicate that Unocal became aware of problem with seal allowing odors to escape on June 9.
9/27/95	Pacific Release. Workers were cleaning pipeline as part of efforts to shut-down plant. County officials questioned whether Pacific was following safety regulations for shutdowns.

In order to address these issues, the "Good Neighbor" amendments would authorize the County to review major maintenance projects at industrial facilities. The County would be able to impose minimum standards on scheduled maintenance turnaround projects to address health and safety and environmental concerns. For example, the County could require a safety inspection of facility equipment within a specified time period after the completion of the turnaround project.

The "Good Neighbor" amendments also ensure that County review of major maintenance projects would not interfere with refinery operations or maintenance decisions. The amendments would prohibit the County from denying a permit for maintenance work, and would require action on permits within 60 days of a completed application. The amendments would also allow otherwise planned maintenance work to be carried out without a permit on a unit or units shutdown due to an emergency.

3. Current hazard score formula would exclude major industrial projects from review

Under the hazard score formula established in the new Ordinance, massive projects with potentially significant health and safety risks would escape County review. For example, the $800 million clean fuels modernization project at the Chevron refinery would not have triggered land use review had it been subject to the new hazard score system. The Hazardous Materials Commission has acknowledged that the Chevron project would not have met the threshold for review under the new Ordinance despite the fact that the project involved the construction and remodeling of huge process units

handling thousands of tons of hazardous materials under high temperatures and pressures.

The current formula emphasizes the *change* in existing risk levels rather than the overall risk presented by a proposed project. The formula also understates the risk to the communities living in the area around an industrial facility. For example, in order to receive the highest point for distance from receptor, a person would have to be living within 300 feet of the project. The formula also fails to take into account at all the potential risk to on-site workers, and assigns no points for persons at industrial sites who may be exposed to accidental releases of hazardous materials. Finally, the formula offsets a project's hazard score by providing substantial credits for closures or reductions in operations by the facility.

The "Good Neighbor" amendments would make several adjustments to the hazard score formula in order to ensure that all projects with potentially significant risks are subject to County review.

First, two revisions are made to shift the focus from *change* in amounts of hazardous materials or wastes to *total* amounts of hazardous materials or wastes involved in the project. The transportation risk factor is revised to examine the total amount of hazardous material or wastes transported rather than only the increase in transported levels. The facility risk factor is revised to consider the total amount of hazardous materials or wastes that moves through the unit or units involved in the proposed project rather than the amounts added by the project.

Second, the community risk factor is amended by revising both the "distance of the project from receptor" and "type of receptor" considerations. The "distance of project from receptor" consideration is adjusted to assign the highest point score to receptors within 0-1500 feet from the project, which the Coalition believes represents the area of significant risk in the event of an accidental release of toxic materials. For example, the town of Crockett is over a mile from the D409 tower which sprayed catacarb on the area. Clearly large amounts of toxic chemicals under high pressure and temperature in large industrial facilities can seriously impact neighbors at many times 300 feet. The "type of receptor" consideration is revised to include workers and other persons who may be exposed at industrial properties in the event of a toxic release.

Third, the credits for reductions or projects to be closed is deleted. A project may present significant risks to on-site workers and the surrounding community even if an applicant will close other units or reduce operations.

Fourth, the calculation of the amounts of hazardous wastes or materials involved in a project is changed from a "fill to capacity" measure to a "throughput" measure. The throughput of materials through process units is an accepted measurement in the

industry and is readily available; while a measurement of all equipment filled to capacity would have to be calculated and would be virtually impossible to verify.

Finally, the overall point score required to trigger County review is lowered from 80 to 70 based on the Chevron modernization example and to better reflect the scope of projects presenting substantial risks. Projects with a hazard score between 70 and 79 would be considered by the Community Development Director and projects with scores of 80 or above would be considered by the Planning Commission.

C. Need For Additional Risk Management, Reporting and Safety Requirements

1. Risk Management

Current law includes various requirements intended to reduce the risk of accidental releases of hazardous materials, including the RMPP/hazard and operability study and process safety management requirements. However, these programs apply only to the handling of acutely hazardous materials. In addition, an RMPP and hazard and operability study are only required when the administering agency determines that there is a significant likelihood that the facility's use of the material may pose an acutely hazardous materials accident risk. (See Tables 8, 9 and 10.)

In addition to their limited scope, existing risk management programs suffer from a lack of effective compliance monitoring or other enforcement measures. While compliance with RMPP, hazard and operability study recommendations and process safety management standards could go a long way toward reducing catastrophic accidents, there is currently no effective enforcement of compliance with such programs and standards. The reports on a number of recent accidents show a consistent failure to follow risk management and other safety procedures. (See Table 12.)

TABLE 12

EXAMPLES OF ACCIDENTS CAUSED BY FAILURE TO COMPLY WITH MANAGEMENT STANDARDS/TRAINING

6/22/92	<u>Rhone-Poulenc Sulfuric Acid Release.</u> Cal-OSHA determined that release and fire caused by defective, older valve that had been modified. Inspectors found workers not properly trained to handle valve.
6/23/92	<u>Chevron Release.</u> Post-incident inspection report indicates accident could have been avoided with proper planning and installation of equipment.

Table 12 (continued)

6/18/93	Tosco Hydrocarbon Release. BAAQMD officials cite deficiencies in training and operating procedures as causes for spill. Accident caused by improperly calibrated instrument.
7/26/93	General Chemical Oleum Leak. Workers turned up heat too high to unload rail car. Air District report states company had no written instructions for unloading oleum and workers only received verbal instructions. Company admits workers had never unloaded oleum from cars before. BAAQMD and Cal-OSHA both found inadequate training and monitoring equipment contributed to accident.
8/22/94	Unocal Catacarb Release. Reports filed with County show Unocal first detected leak on 8/22/94 but decided to keep operating despite worker warnings. Company officials failed to adhere to company's policies regarding accident response and notification of problem. Unocal had delayed repairs to unit until scheduled turnaround in October, running unit six months longer than originally planned. Refinery set record for amount of material produced.
5/17/96	Unocal Coker Fire. Workers started fire by turning wrong pipeline valve. There may not have been clear explanatory marks on the valves. Workers claim that Unocal repeatedly rejected recommendations for simple engineering changes made during internal safety review over five years before.

The "Good Neighbor" amendments include a number of provisions intended to improve the management of hazardous materials and reduce the risk of accidental releases by expanding the scope and content of current requirements. For example, the amendments require that all applications for a permit under the Ordinance include an updated hazard and operability study. Such studies are currently required only for facilities handling acutely hazardous materials.

The "Good Neighbor" proposal also requires that a hazard and operability study identify hazards due to material, mechanical and safety failure or personnel practices, which are not required to be identified under current law. The proposal requires the hazard and operability study to identify accident risks to on-site personnel and present a quantitative analysis of any significant human health risk, neither of which are currently

required. An updated RMPP would also be required for facilities handling acutely hazardous materials.

The "Good Neighbor" amendments attempt to improve compliance with risk management programs through two measures. First, all applicants would be required to submit the results of an independent audit of compliance with process safety management standards related to the project. Second, the County would be required to make specific findings that the applicant will comply with hazard and operability study recommendations, process safety management standards and the RMPP, if applicable, before approving the project.

2. Investigation and Reporting Requirements

Determining the causes of accidents, explosions, fires and releases is critical to the design and implementation of safety measures to prevent a recurrence of the conditions that led to the facility upset. Currently, however, the investigation and information related to the accident is usually controlled by the facility. In those cases where the County does assemble a review team, the team typically does not include workers, who are often in the best position to identify problems in facility operations. Similarly the impacted community is seldom involved in reviewing accidents, despite their undeniable stake in determining causes and preventing future accidents.

Under current law, it is also virtually impossible for the public to obtain meaningful information regarding accidents and releases. Reports are filed with multiple agencies with no consistent format or any central clearinghouse of information. The information provided by the facilities is also typically cryptic and of little help in determining the causes of the accident.

The "Good Neighbor" amendments address these problems with several provisions. First, in the event of an accident or upset involving the release of hazardous materials or wastes, the facility manager would be required to personally present a report of the incident to the Board of Supervisors at the earliest feasible Board meeting following the incident. Second, the County would be required to establish review teams comprised of County staff, facility management, workers and the public to investigate all serious accidents involving the release of hazardous materials or wastes. Finally, the County Department of Health Services would serve as a clearinghouse for all reports of accidental releases of hazardous materials or wastes that are required by law to be filed with any local, state or federal agency. These reports would be available to the public upon request.

3. Safety Measures

The risks from oil refineries and other industries managing hazardous materials and wastes result primarily from the processing and handling of these materials under

high temperatures and pressures. The timing and quality of the welding and other repair and maintenance work performed on the process equipment and vessels containing these materials is often critical to the safe operation of the facility. (See Table 11.)

The "Good Neighbor" amendments include several provisions intended to ensure that this work is done by qualified workers and is properly inspected. The amendments require that workers who will be employed to perform welding on high temperature, high pressure installations pass specified tests administered by an independent agency. The applicant would be required to assure the professional independence of all certified welding inspectors who will work on the project. All prefabricated high temperature/high-pressure installations would be required to have 100 percent of their welds tested by x-ray inspection.

D. Need For Meaningful Public Review and Project Approval Based on Specific Criteria and Findings

The existing RMPPs and PSM standards do not require public hearings or establishing any public process for decisions. In addition, the new County Ordinance does not establish criteria for project approval or set forth specific findings related to the review of hazardous material and hazardous waste development projects. By contrast, the "Good Neighbor" amendments require specific findings designed to ensure careful review of the potential health and safety and environmental impacts of the proposed project.

Under the "Good Neighbor" proposal, the County would be required to make specific findings that the proposed project will not significantly adversely affect the health, safety and general welfare of the residents of the County or the local economy, and will not impose a significant risk to human health or the environment from an accident involving hazardous materials or wastes. If these findings could not be made, the County could approve the project only by making specific findings of overriding considerations. These include findings that all feasible measures to reduce or minimize the significant risks of the project have been imposed, and that specific benefits of the project override any remaining unmitigated risks or effects of the project.

The "Good Neighbor" amendments also require findings intended to ensure compliance with risk management and safety measures. The County would be required to find that the applicant will comply with measures specified in the updated hazard and operability study, process safety management standards, any updated RMPP, and all other feasible measures required by the County for the protection of health and safety or the environment. The County would also be required to find that the workers performing welding on high temperature and pressure installations and performing the asbestos-related work have been properly certified. The County would also be required to make other findings to ensure proper welding of high temperature and high pressure installations, including x-ray and independent inspections.

The "Good Neighbor" proposal would require meaningful public notice and hearing on all projects subject to land use review. This would include a right to appeal all decisions to the Board of Supervisors.

E. Need for Meaningful Penalties and Sanctions

Current law does not include any meaningful penalties or sanctions for non-compliance with permitting requirements or for corporate negligence that causes injury or death. The "Good Neighbor" Ordinance would impose civil fines of up to $25,000 for each separate violation of the Ordinance. A portion of the funds from such levies would be earmarked for a special Community Technical Assistance fund for various efforts including: independent community-based air sampling by industrial neighbors, establishment of a Industrial Neighbor Ombudsman position that reports directly to the Board with broad investigatory powers and technical experts to assist community groups in reviewing industrial projects needing county permits.

In addition, the proposal would make it a criminal misdemeanor for any person to discipline a worker who refuses to perform a task that the worker believes would create an unreasonable risk of injury or death to facility personnel or to offsite persons. The "Good Neighbor" amendments would also make it a criminal misdemeanor for any manager who has committed gross negligence in the management of hazardous wastes or materials that results in injury or death to workers or offsite persons.

IV. CONCLUSION

There may have been a time when we could allow industry to police itself. In the old days, when tight-knit communities were made up of workers and bosses, companies had more of a relationship with the towns surrounding their plants. Now, with multinational corporations in far flung parts of the world, we need to bring the control back to the local jurisdiction.

The "Good Neighbor" proposal will not prevent all accidents, but it will go a long way toward reducing the risk to workers and adjacent communities of an almost daily threat of fires, explosions and toxic releases. It is time for the County to reassert itself as the watchdog over industry. The workers and residents of the County deserve no less.

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